ACCESS POINT

User Manual

For the following models:

ULTIAIR 419KC	ULTIAIR 323KC
ULTIAIR 423KC	ULTIAIR 423KN
ULTIAIR 319KC	ULTIAIR 417SB

Contents

1. INTRODUCTION.....5
1.2 License levels.....5
1.3 The information coded in model numbers of ULTIAIR devices - example: 6
1.4 Main features.....6
1.5 Typical applications.....6
2. INSTALLATION.....8
2.1 Checking the contents.....8
2.2 Description of interfaces.....8
2.3 Connections.....8
3. FIRST RUN.....9
3.1 Configuration with WinBox (in Windows OS).....9
4. EXAMPLE CONFIGURATIONS.....12
4.1 Bridge - WDS.....12
4.2 HotSpot.....22

Warning

It is necessary to ensure safe operating conditions (among other things described in this manual – to protect the device against direct strike of lightning, to use shielded cables connecting the device to the PC or other peripherals). It is not allowed to make any changes to the device – it will void warranty as well as legality of use.

Safety

The device has been designed and manufactured with utmost care for the safety of installing and using. To ensure safe operation, the user should follow all warnings and instructions in this manual and directions for use of the cooperating equipment (e.g. a PC).

Contents of the box

- Antenna with assembled and sealed RouterBoard device, wireless adapter (card).
- Power supply with PoE adapter.

During the delivery, make sure that the packaging is not damaged. In the case of any damage you should not pick up the parcel or contact the vendor. Please, also check the contents of the package shown in the list above.

Contents of the manual

This manual provides a detailed description of wireless **ULTIAIR** set, including its installation, configuration, and operation. The user is obliged to read it carefully before installation of the equipment and follow all instructions, especially those concerned with safety.

Safe use rules

Each wireless transmission device **ULTIAIR** complies to international electric code. Below there are the basic rules of safe operation of the devices:

- power socket must be grounded in accordance with applicable regulations,
- the set has to be installed and reviewed prior to switching on power supply,
- before any maintenance the power has to be switched off,
- the device is disabled only when all power cables and connections with other equipment are completely disconnected,
- it is not allowed to use power cables with broken insulation,
- all installation work should be done by qualified personnel only,
- the devices are not suitable for use in flammable environments,
- the devices have to be protected against access of unauthorized people, especially children,
- the parts of the set have to be solidly mounted,
- if the device is moved from a cool place to a warm environment, the moisture can prevent proper operation – one should wait until the moisture has evaporated.

Notice: It is not allowed to touch the contacts of the sockets – risk of damage due to electrostatic discharge!

Power

ULTIAIR wireless network device does not require an external power supply directly connected to the device. The set includes PoE adapter. The power cord (plugged into AC power outlet) is connected to its socket marked AC. The port marked LAN (Data Input Port) is connected with computer or appropriate telecommunications equipment. The outdoor/external part of the set is connected via Category 5 cable terminated with RJ-45 connector to the port marked PoE.

Operation environment

The antenna part of the set has been designed for outdoor use. It can operate in adverse weather conditions (rain, snow, low and high temperature). However, it cannot be placed close to chimneys, outdoor parts of air-conditioners, other antennas etc.

1. INTRODUCTION

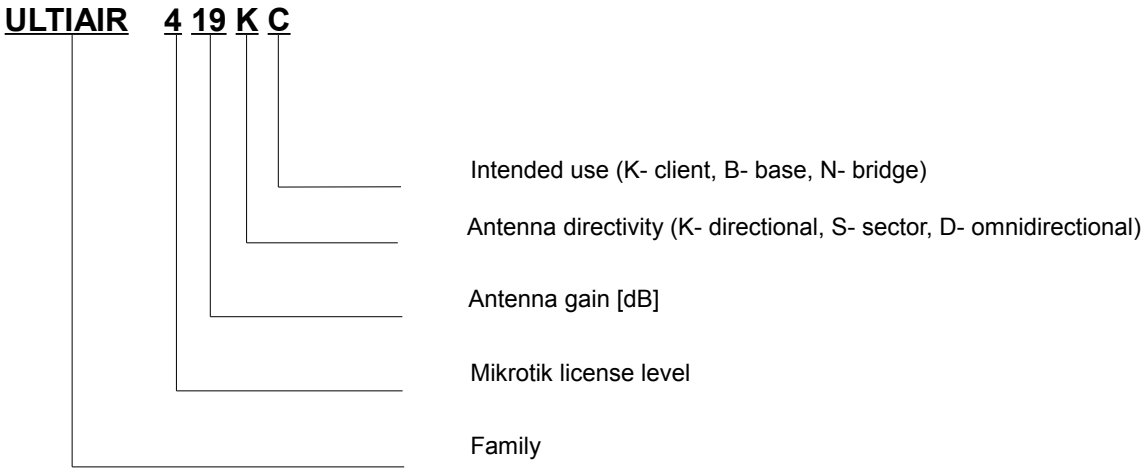
1.1 Basic information

MikroTik RouterOS is a special operating system based on Linux, designed for building advanced access points and routers with bandwidth management. Despite advanced functions the system is easy to manage via WWW, system console, or a special, user-friendly tool - Winbox.

1.2 License levels

License level	3 (WISPCPE)	4 (WISP)
Upgradable to	ROS v3.x	ROS v3.x
Initial Config Support	-	15 days
Wireless AP	-	yes
Wireless Client and Bridge	yes	yes
RIP, OSPF, BGP protocols	yes (v3 x86 = RIP)	yes (v3 x86 = RIP, OSPF)
EoIP tunnels	no limit (V3 = 1)	no limit
PPPoE tunnels	200 (V3 = 1)	200
PPTP tunnels	200 (V3 = 1)	200
L2TP tunnels	200 (V3 = 1)	200
VLAN interfaces	no limit (V3 = 1)	no limit
P2P firewall rules	no limit (V3 = 1)	no limit
NAT rules	no limit	no limit
HotSpot active users	1	200
RADIUS client	yes	yes
Queues	no limit	no limit
Web proxy	yes	yes
Synchronous interfaces	-	yes
User manager active sessions	10 (v3 10)	10 (v3 20)

1.3 The information coded in model numbers of ULTIAIR devices - example:

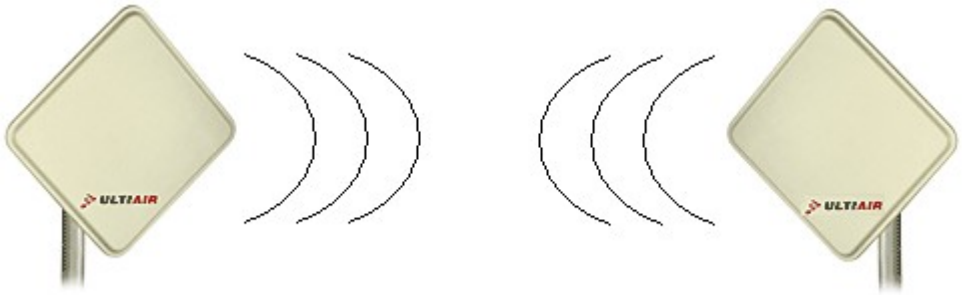

ULTIAIR 4 19 K C
Intended use (K- client, B- base, N- bridge)
Antenna directivity (K- directional, S- sector, D- omnidirectional)
Antenna gain [dB]
Mikrotik license level
Family

1.4 Main features

- Flexible configuration;
- Possibility of creating advanced network systems;
- Efficient data transmission (40 Mbit/s in Nstreme) .
- Weather-resistant housing (IP 66);
- Quick configuration of Access Point, Bridge, and HOTSPOT modes;
- Easy installation.

1.5 Typical applications

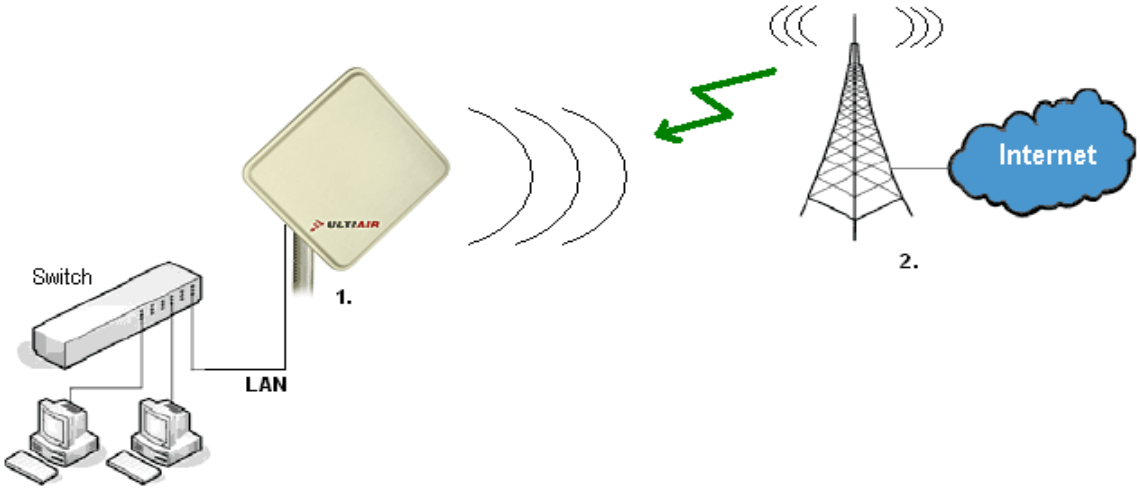
- Bridge



- HotSpot

- AP

- Client (WISP)



2. INSTALLATION

2.1 Checking the contents

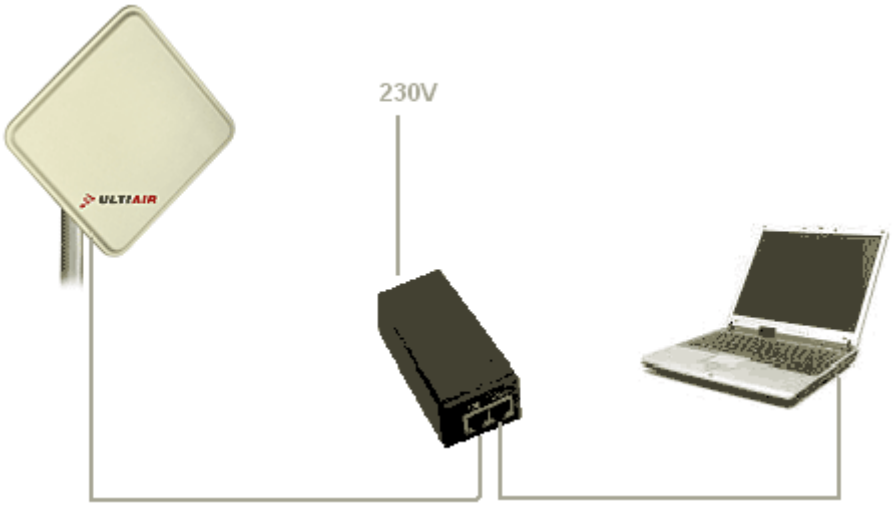
Before installation check the contents of the package (the list on page 3). above. In any doubt contact the vendor.

2.2 Description of interfaces

1. Input - Ethernet interface (RJ-45)

1. Output (PoE) to **ULITAIR** - RJ-45
2. Ethernet input - RJ-45
3. Power cord (230V AC)

2.3 Connections

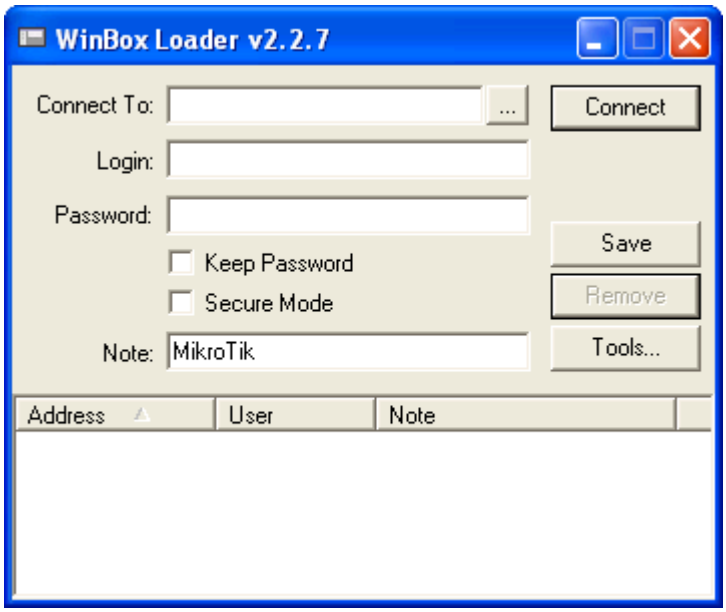


3. FIRST RUN

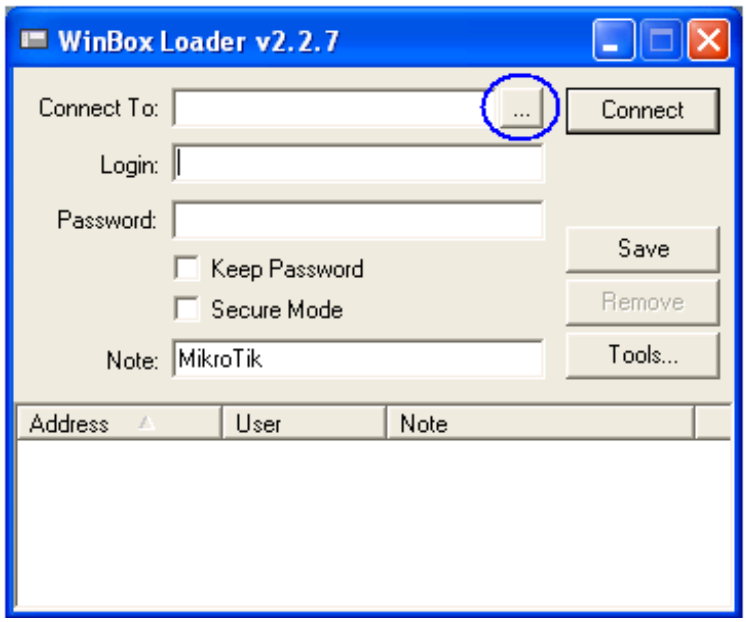
3.1 Configuration with WinBox (in Windows OS)

The Winbox utility can be downloaded from www.dipolnet.com (Download section). The device has to be connected with a PC via Ethernet cable.

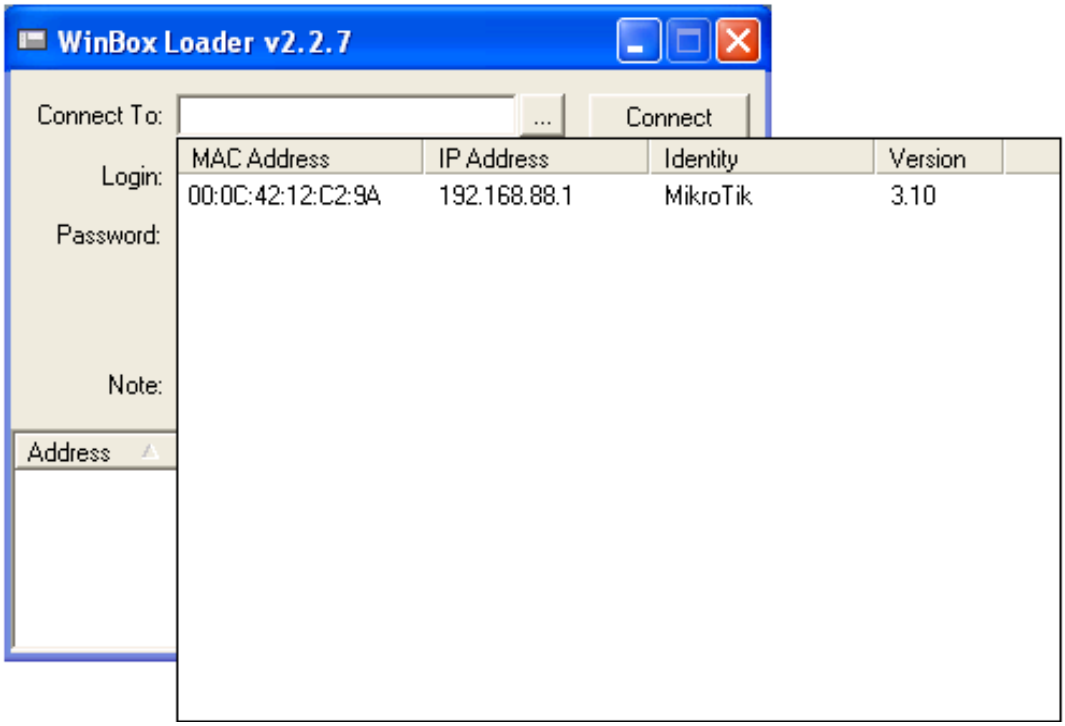
1. Run the utility.



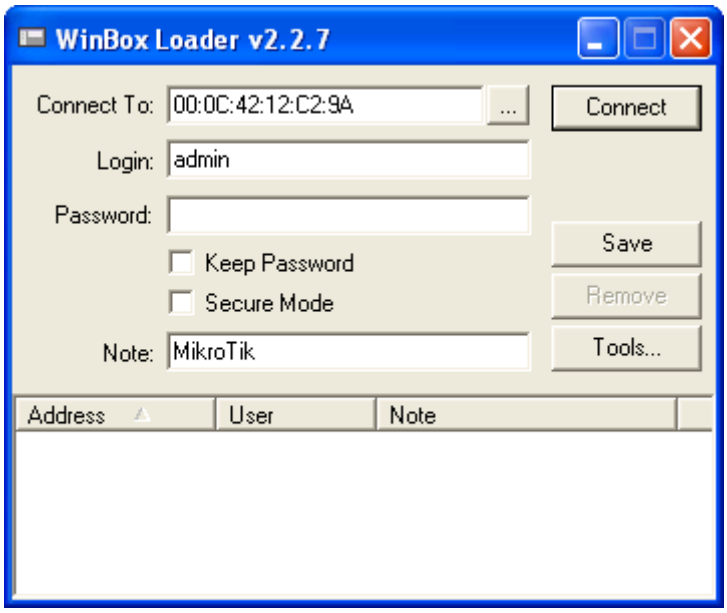
2. Click on the three dots.



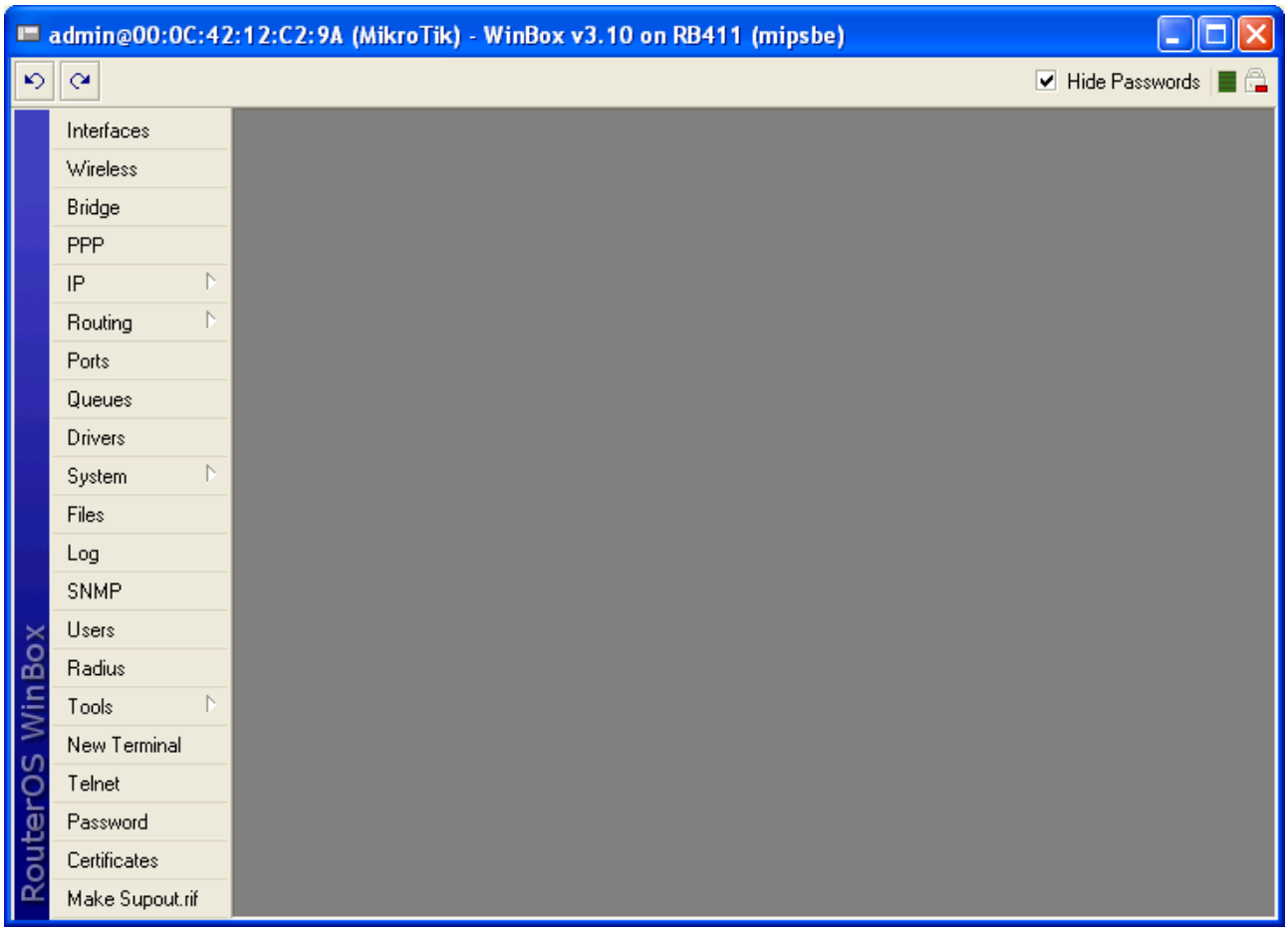
3. From the list displayed choose the device being configured.



4. In ***Login*** field enter „admin” (the ***Password*** field leave blank) and click ***Connect.***

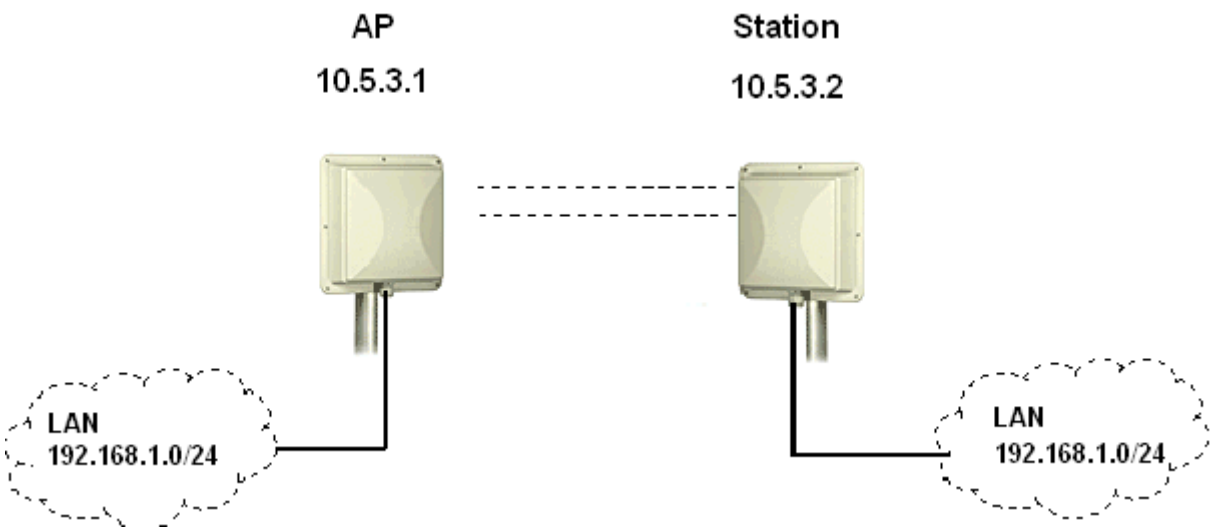


5. The WinBox menu will appear:



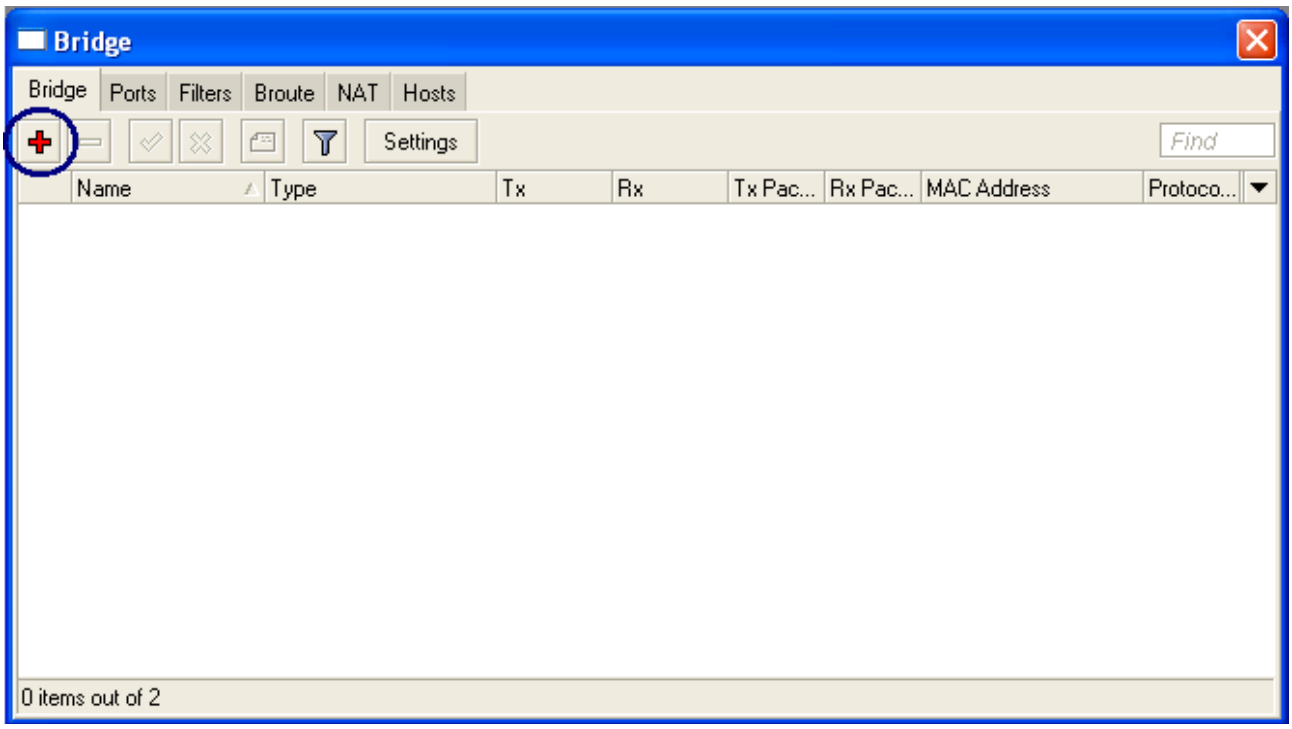
4. EXAMPLE CONFIGURATIONS

4.1 Bridge - WDS

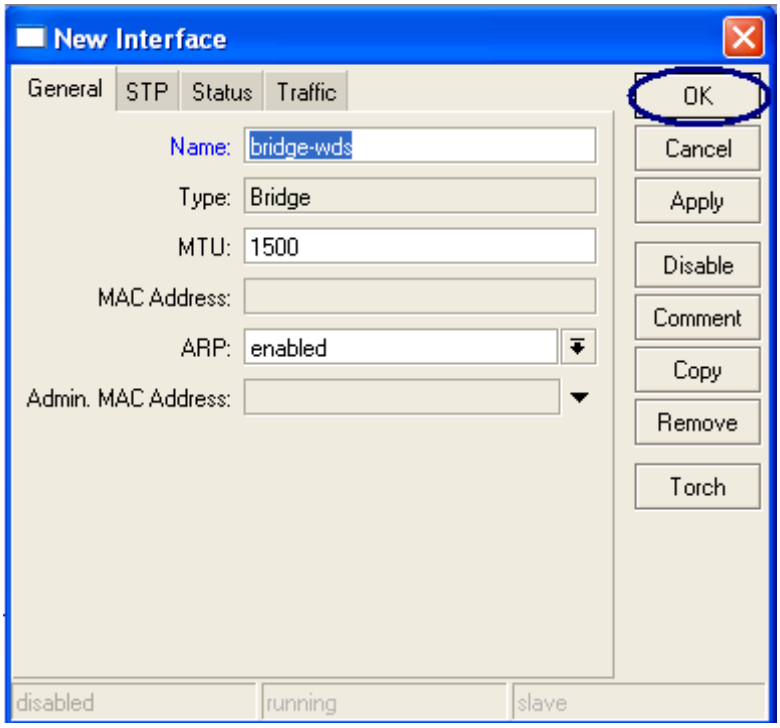


Configuration OF BASE STATION (AP)

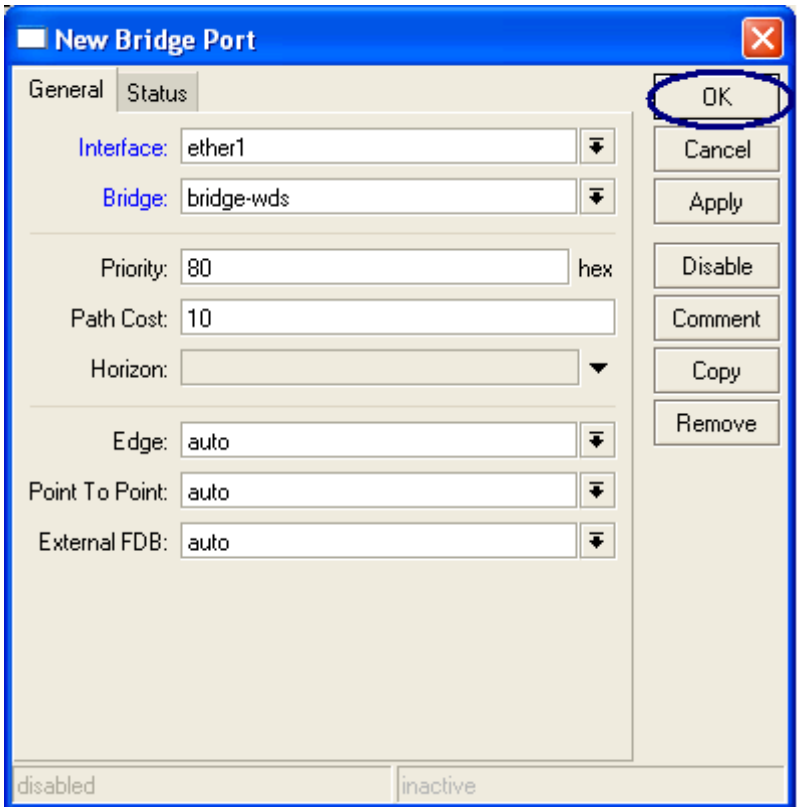
1. With WinBox the user can create a bridge, by clicking ***Bridge*** tab and ***+.***



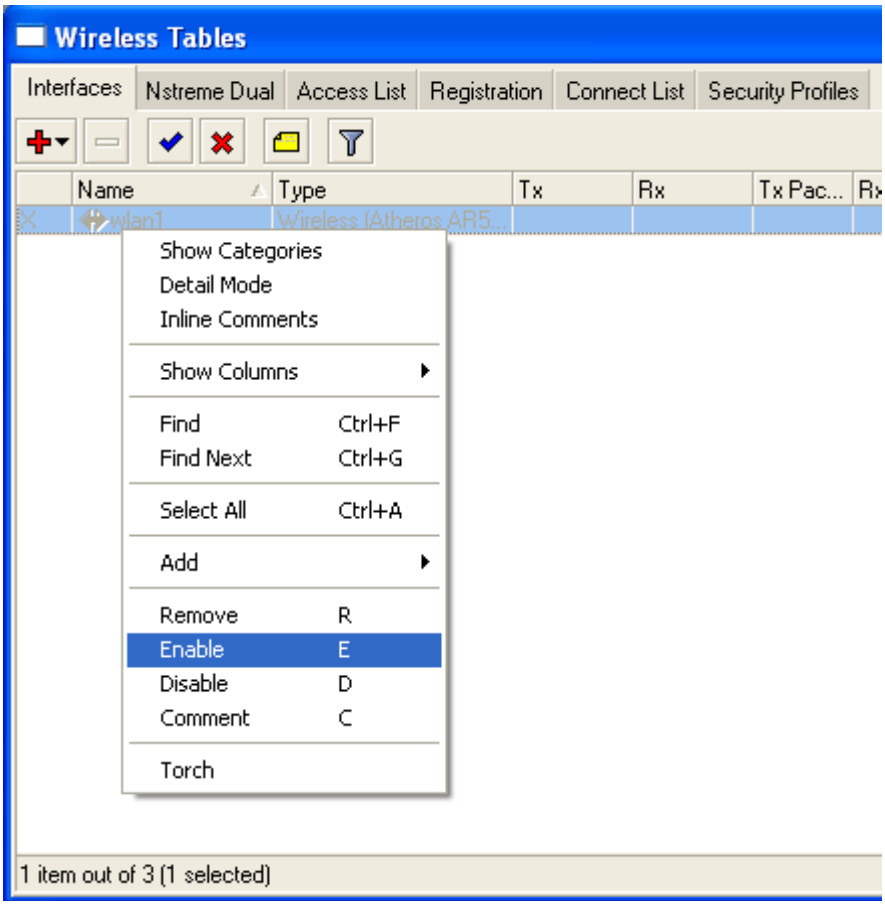
2. In the new window the user should enter ***bridge-wds*** *(in* ***Name*** *field) and clik* ***OK.***



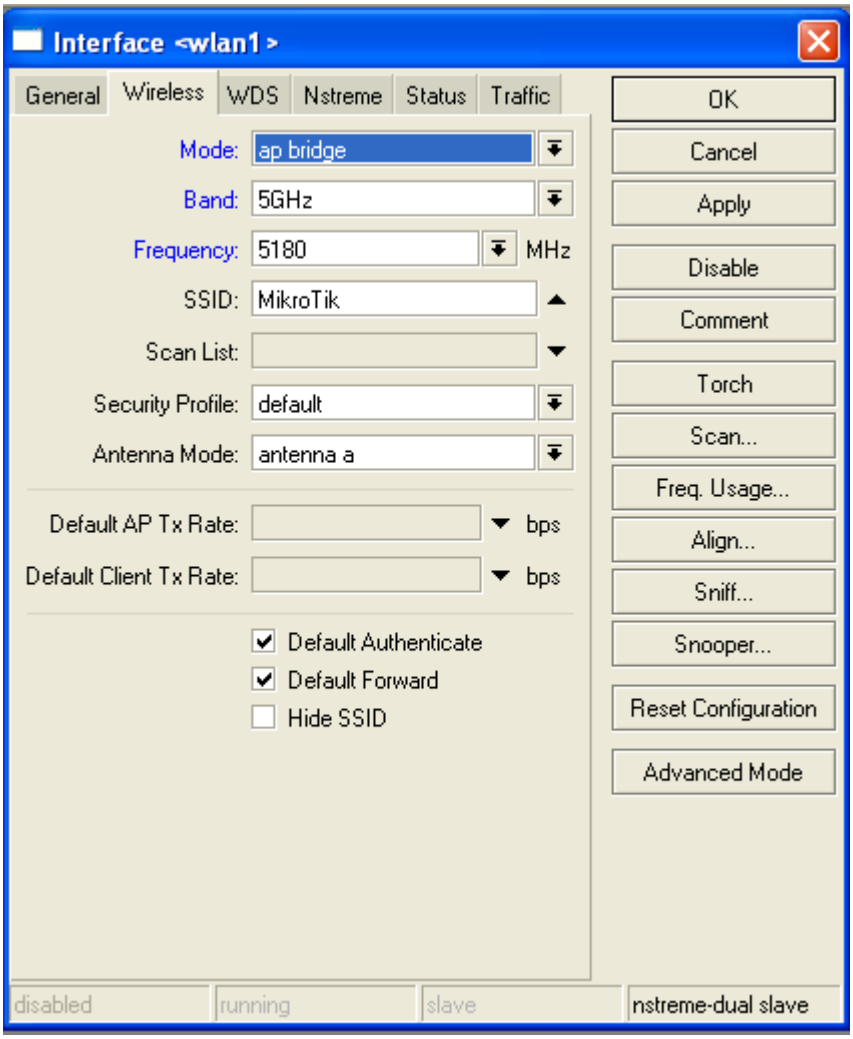
3. In ***New Bridge Port*** window click + and add “ethr1” interface to the created bridge. Then click ***OK***.



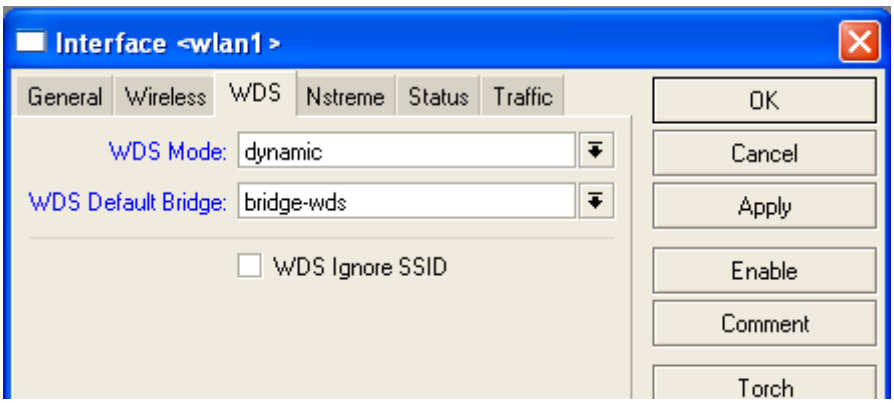
4. Configuration of wireless interface – enter ***Wireless*** menu and turn on radio transmission (right click on “wlan1” and click ***Enable***).



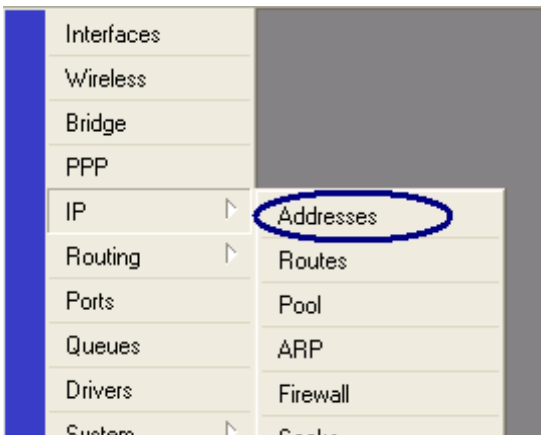
5. Configuration of wireless adapter (card) – double click on “wlan1” and choose ***Wireless*** tab.
Set the Mode of work: ***AP Bridge,*** SSID: ***MikroTik,*** Frequency: (e.g.) **5180** MHz.



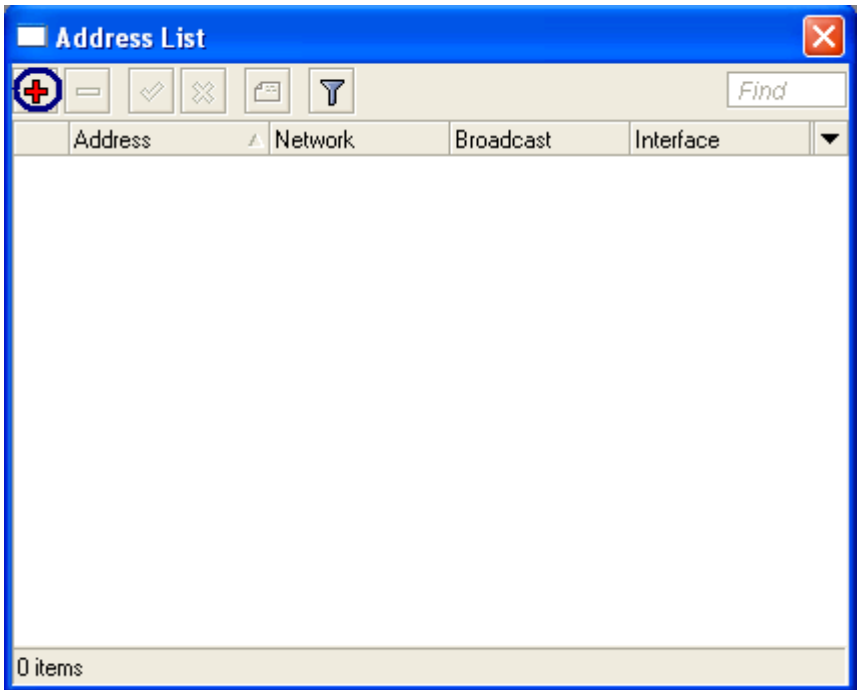
6. Then go to ***WDS*** tab and set ***dynamic*** WDS Mode and ***bridge-wds*** WDS default Bridge, click ***OK***.



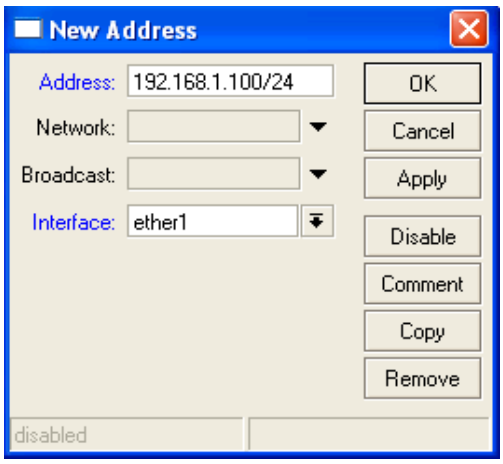
7. IP address assignment. Enter ***IP*** tab and choose ***Addresses***.



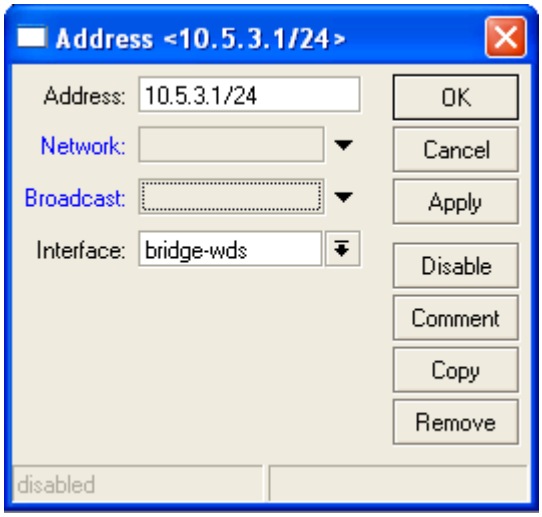
8. Click on **+**. In the window you should assign appropriate IP addresses.



9. In ***Address*** field enter 192.168.1.100/24 and choose ***Interface:*** ether1, confirm ***OK.***

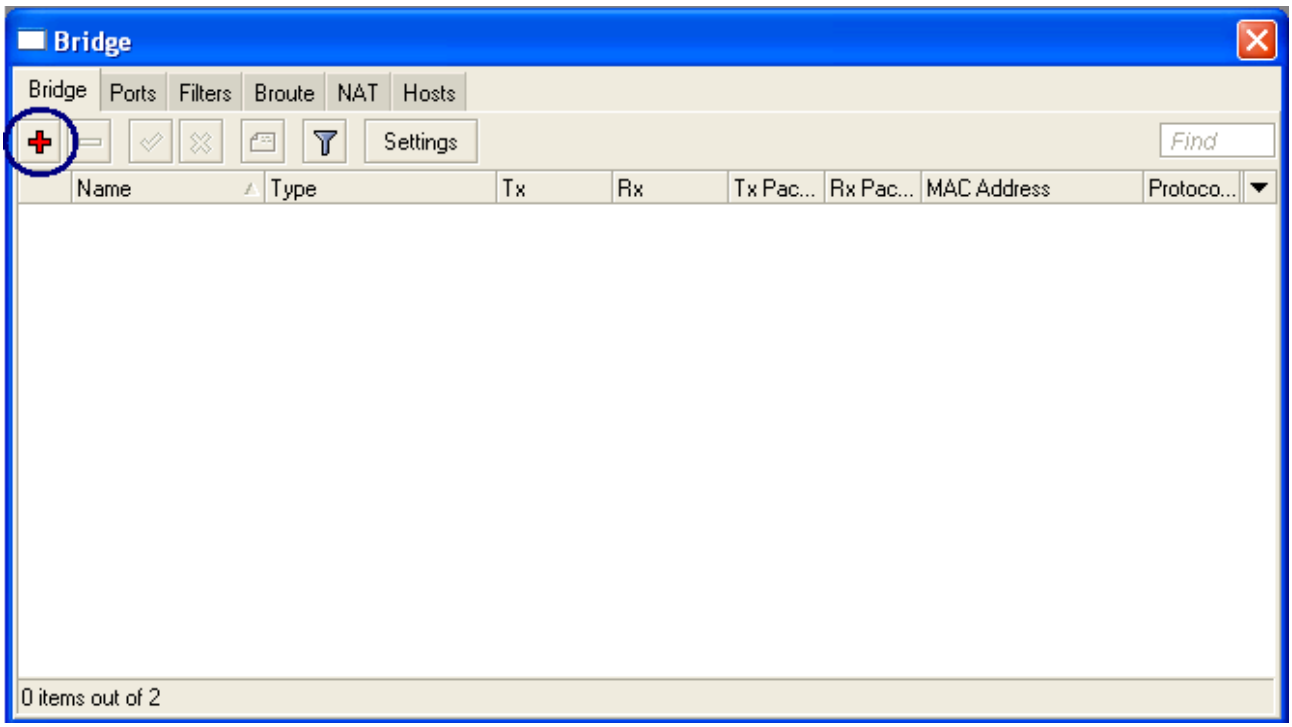


10. Click again on **+** and add another ***Address:*** 10.5.3.1/24 and choose ***Interface:*** bridge-wds, confirm ***OK.***

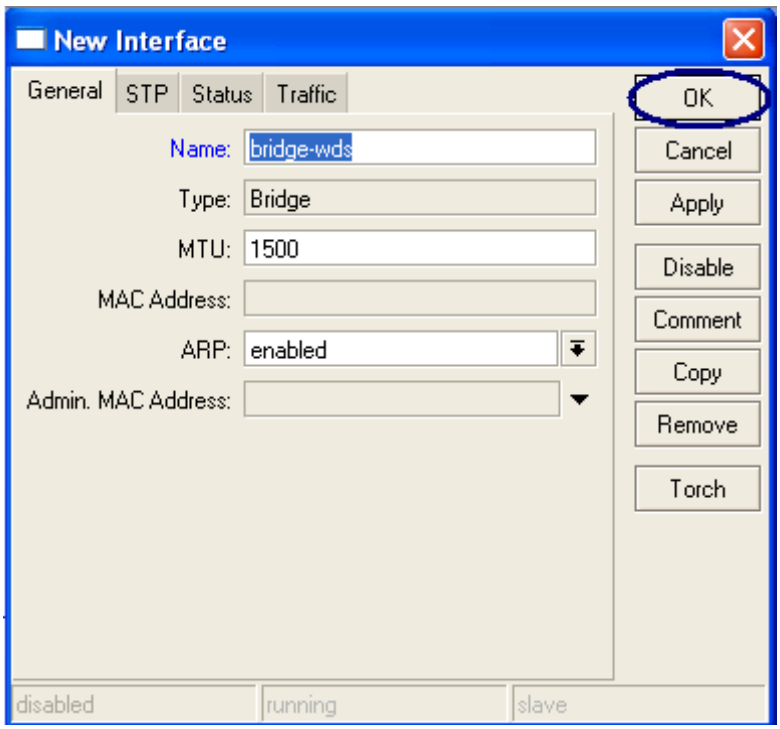


Configuration of client station (Station)

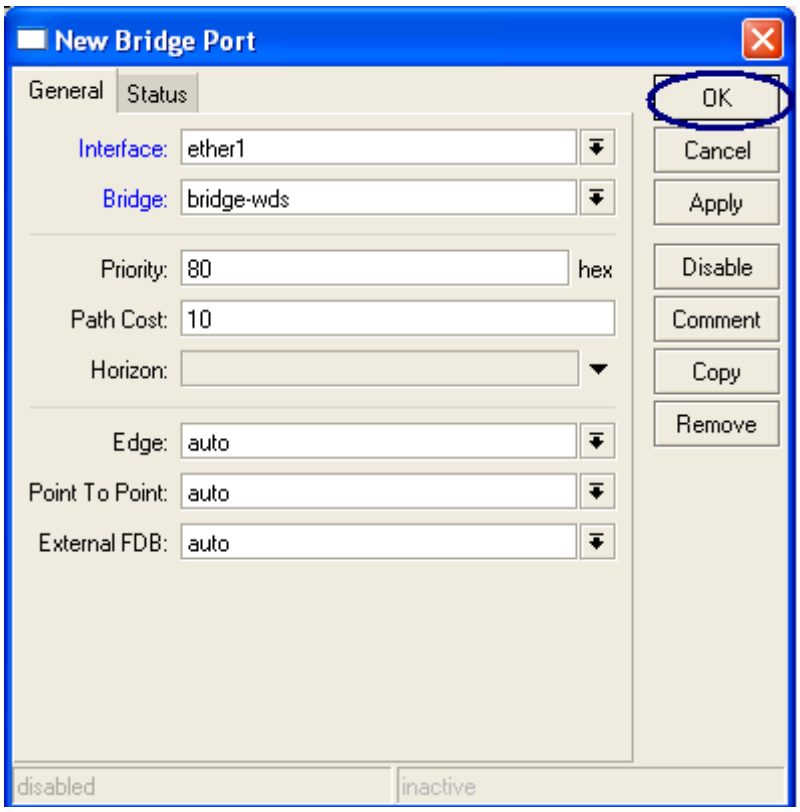
1. With WinBox utility create a bridge – click on ***Bridge*** and then ***+.***



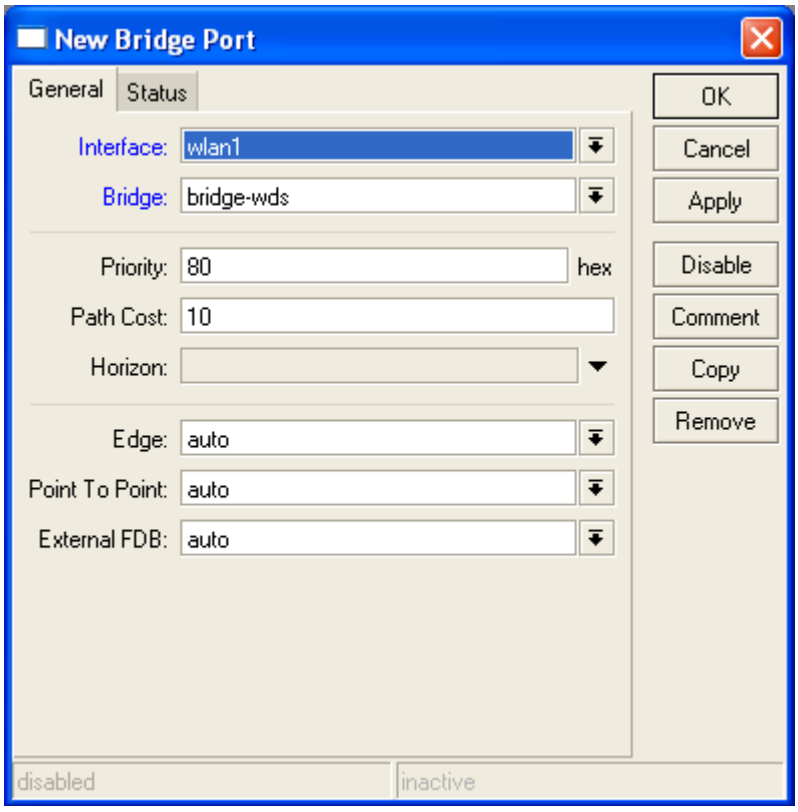
2. In **New Interface** window, enter ***wds-bridge*** (Name) and click ***OK***.



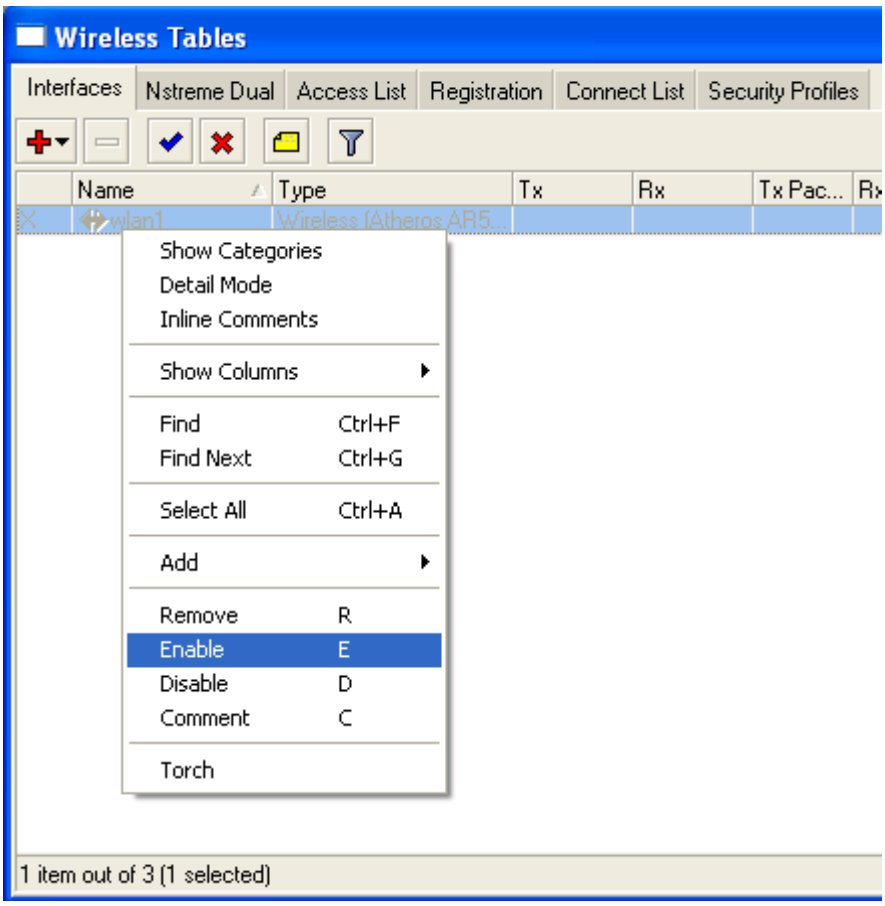
3. In **New Bridge Port** window add “ether1” to the bridge, confirm ***OK***.



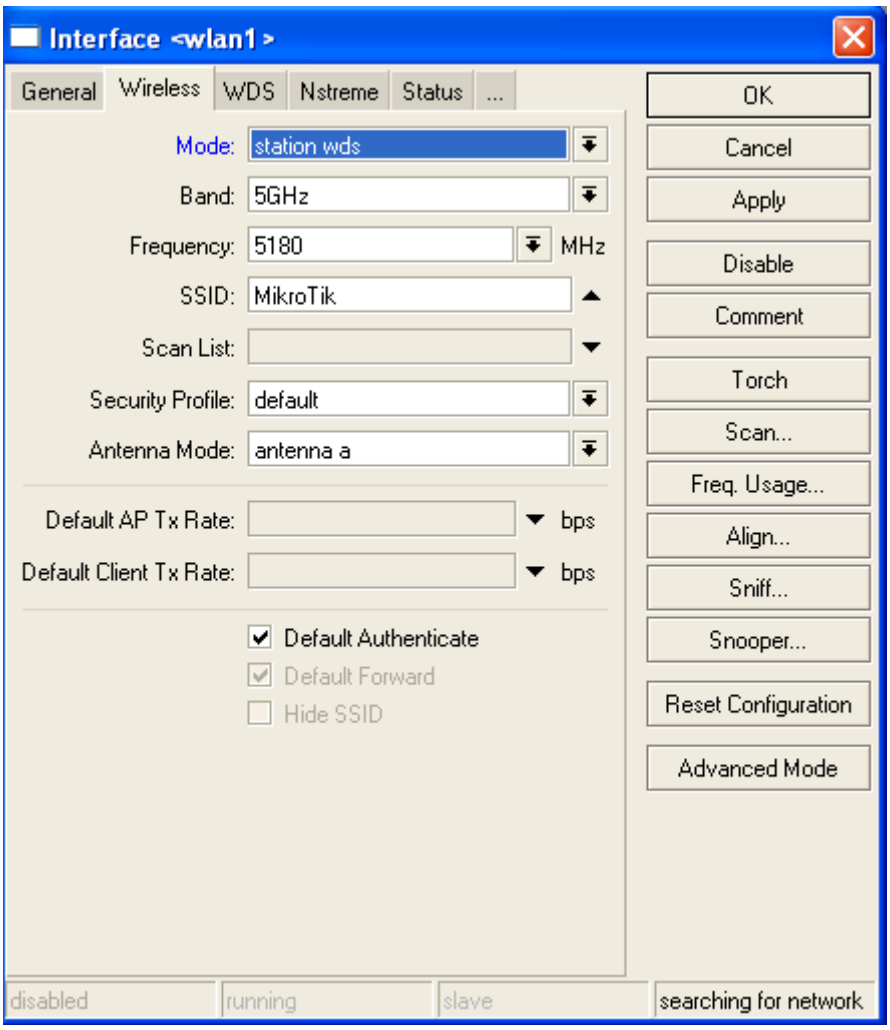
4. Click + again and then add **wlan1** (Interface) to the bridge, confirm ***OK***.



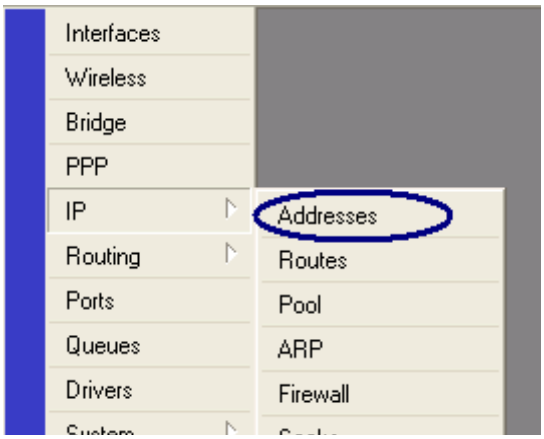
5. Configuration of wireless interface. Enter ***Wireless*** menu. First, switch on the radio - right click on **wlan1** interface and then click on ***Enable***.



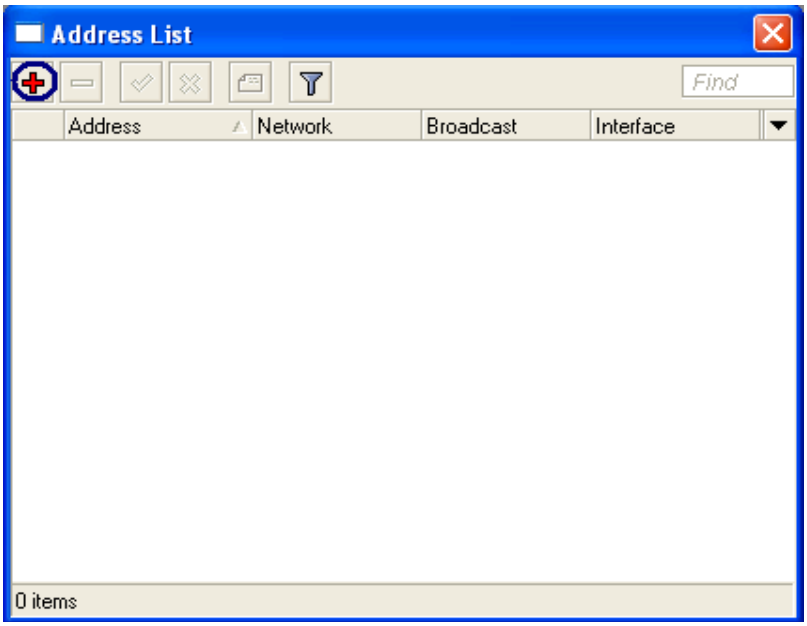
6. Configuration of wireless adapter (card). Double click on **wlan1** interface and go to ***Wireless*** tab.
Set ***station wds*** (Mode), ***MikroTik*** (SSID), ***5GHz*** (Band).



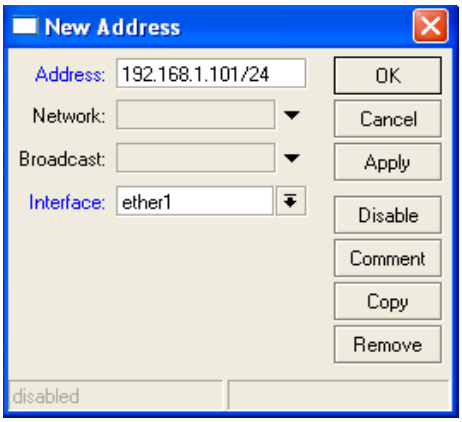
7. IP address assignment. Enter ***IP*** tab and choose ***Addresses***.



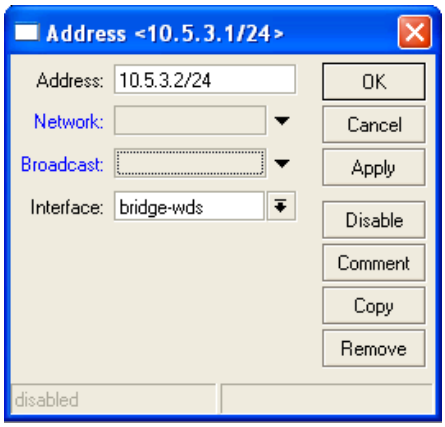
8. Click on **+**. In the window you should assign appropriate IP addresses.



9. In ***Address*** field enter 192.168.1.101/24 and choose ***Interface:*** ether1, confirm ***OK.***

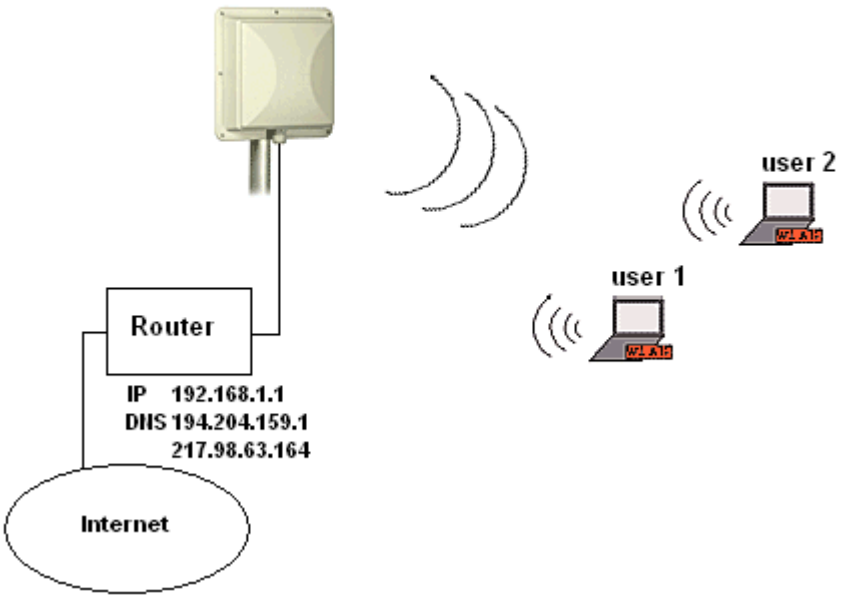


10. Click again on **+** and add another ***Address:*** 10.5.3.1/24 and choose ***Interface:*** bridge-wds, confirm ***OK.***



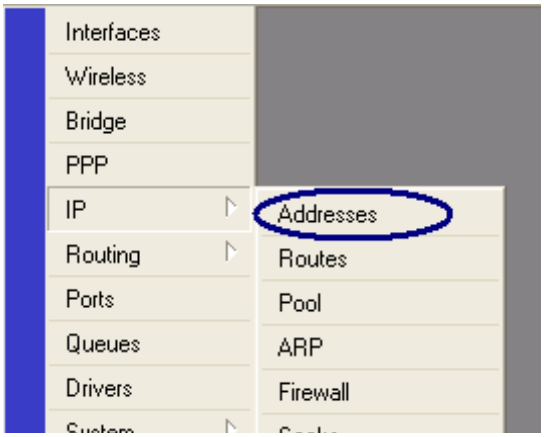
11. You may test the bridge-wds pinging the 192.168.1.101 address from the local network connected to the base station.

4.2 HotSpot

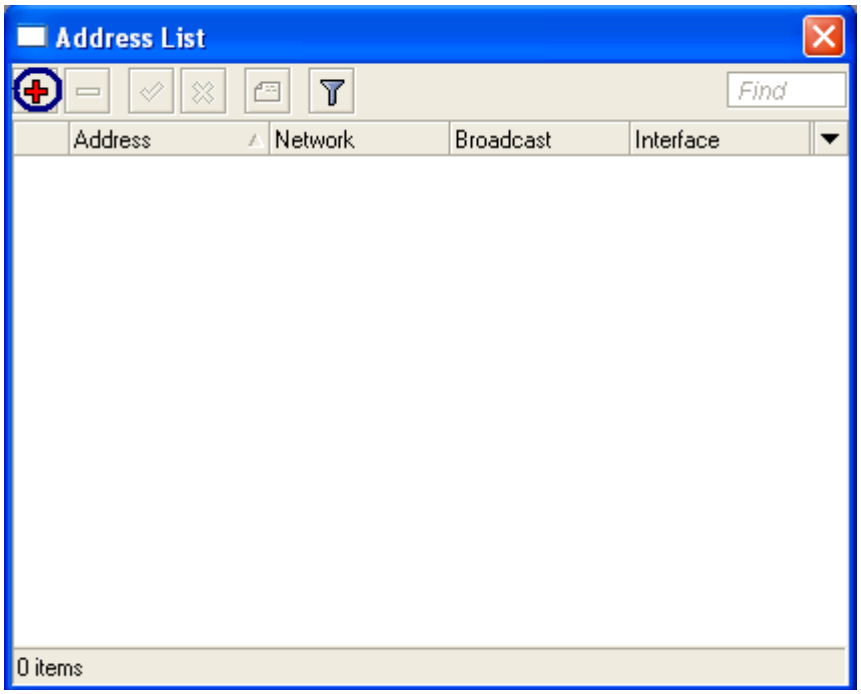


Configuration with WinBox.

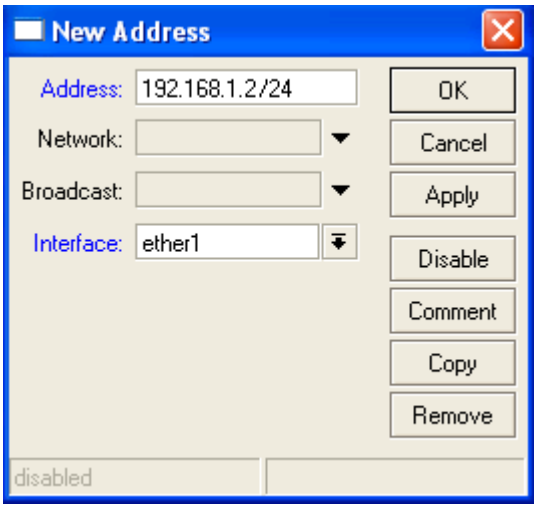
1. IP address assignment. Enter ***IP*** tab and choose ***Addresses***.



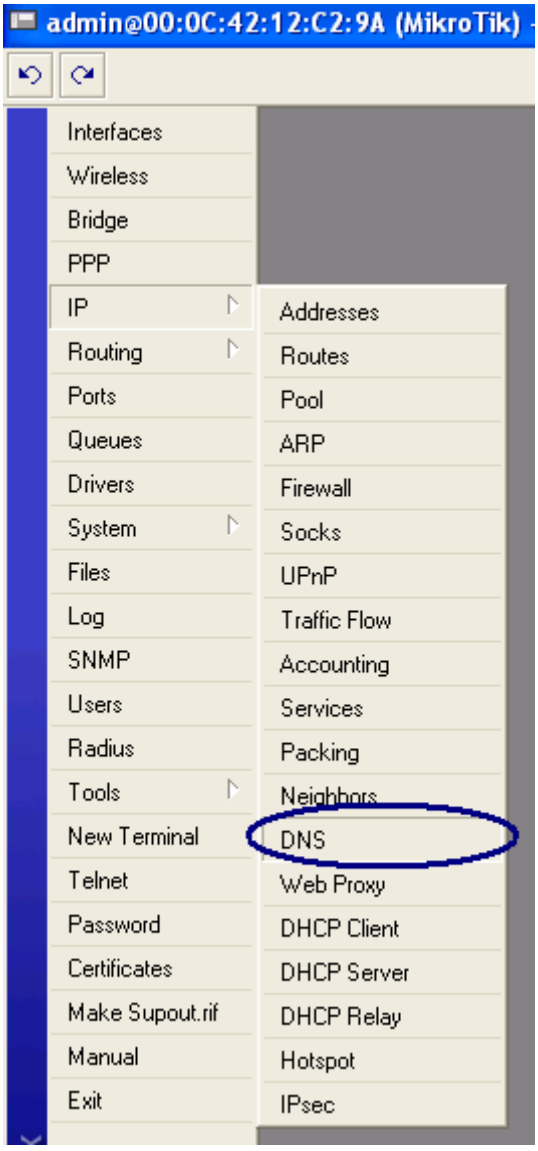
2. In the **Address List** window click on **+**. In the next window you should assign appropriate IP addresses.



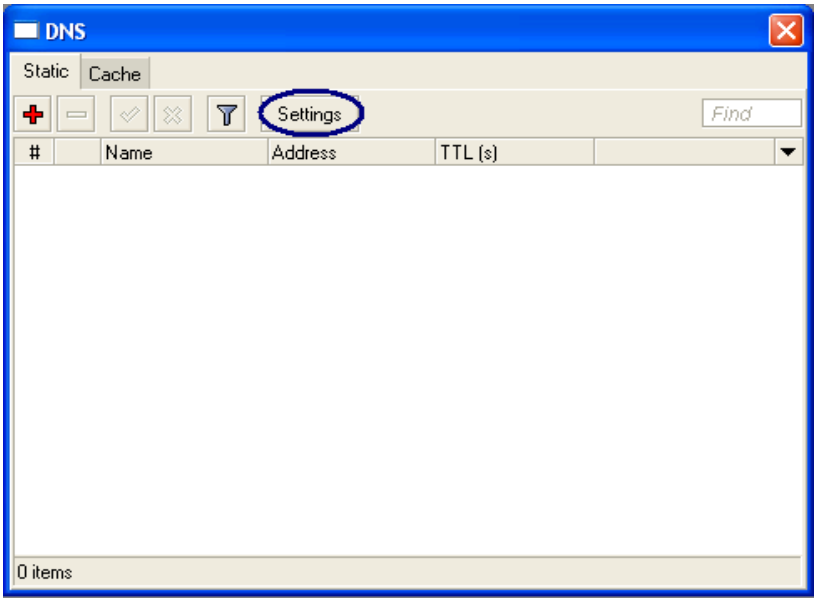
3. In ***Address*** field enter 192.168.1.2/24 and choose ***Interface:*** ether1, confirm ***OK.***



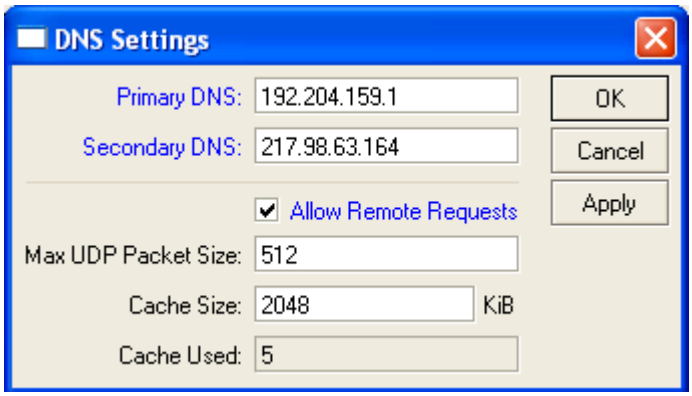
4. Setting DNS servers – choose ***IP/DNS.***



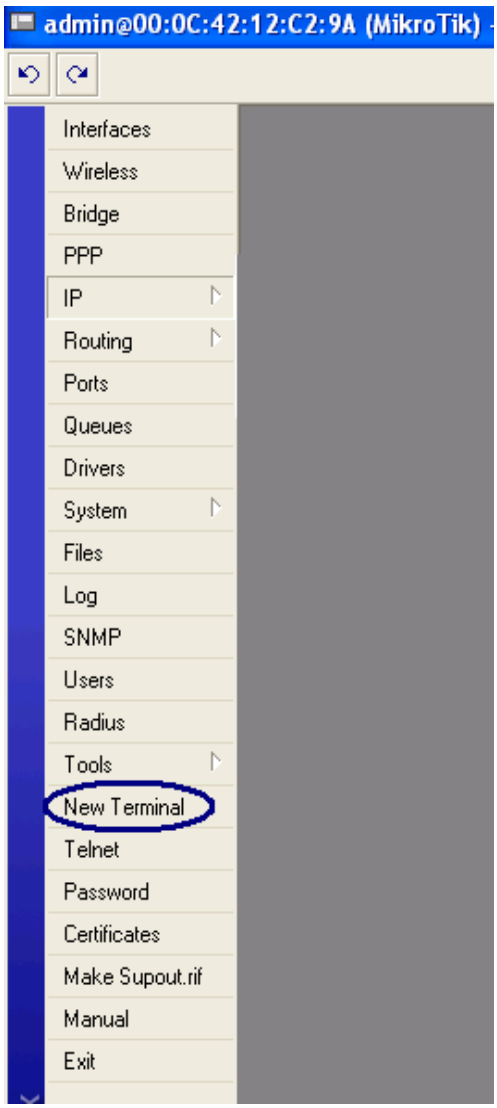
5. In **DNS** window click ***Settings.***



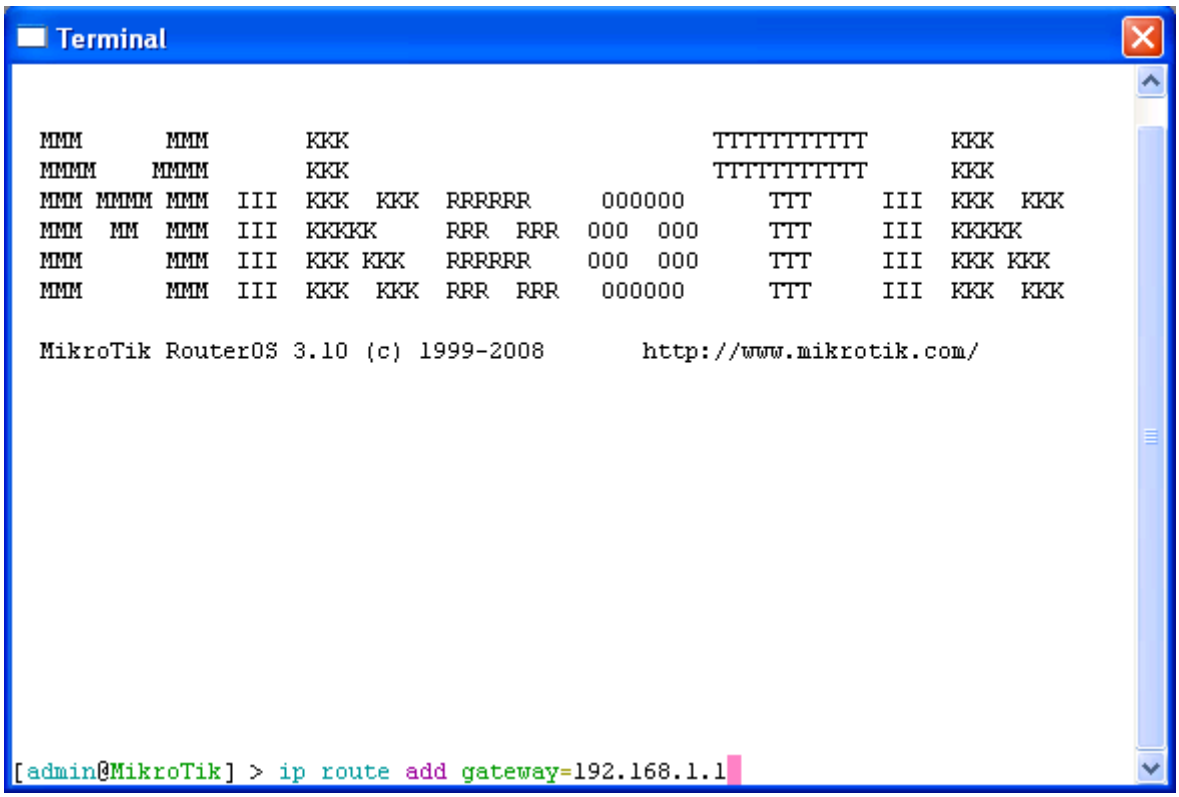
6. Enter DNS addresses. As the ***Primary DNS:*** 194.204.159.1, and as the ***Secondary DNS:*** 217.98.63.164***.*** Then tick ***Allow Remote Requests*** and confirm ***OK.***



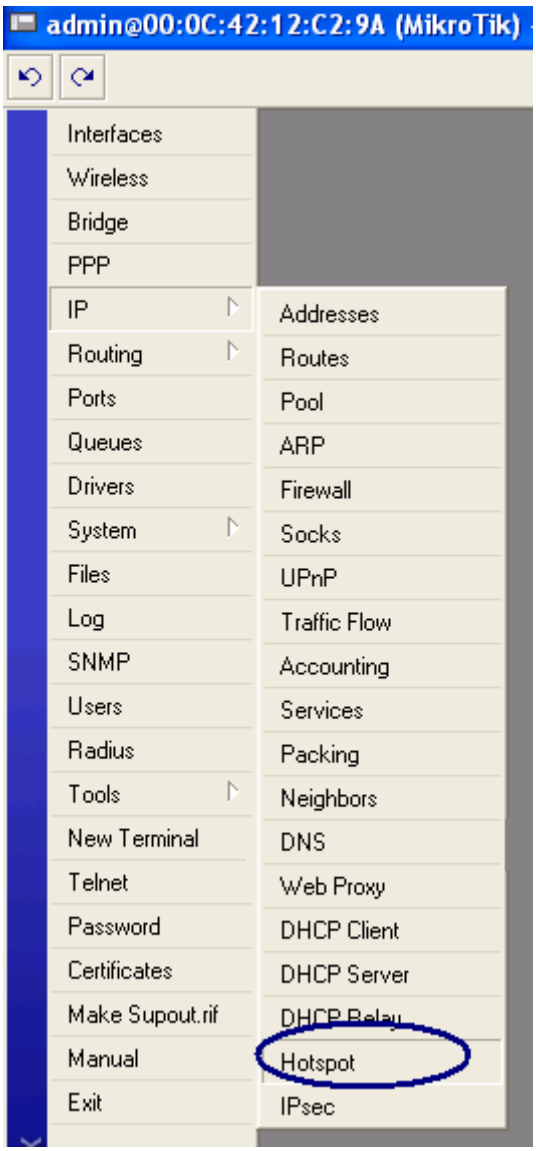
7. Enter gateway address. Fist click on ***New Terminal.***



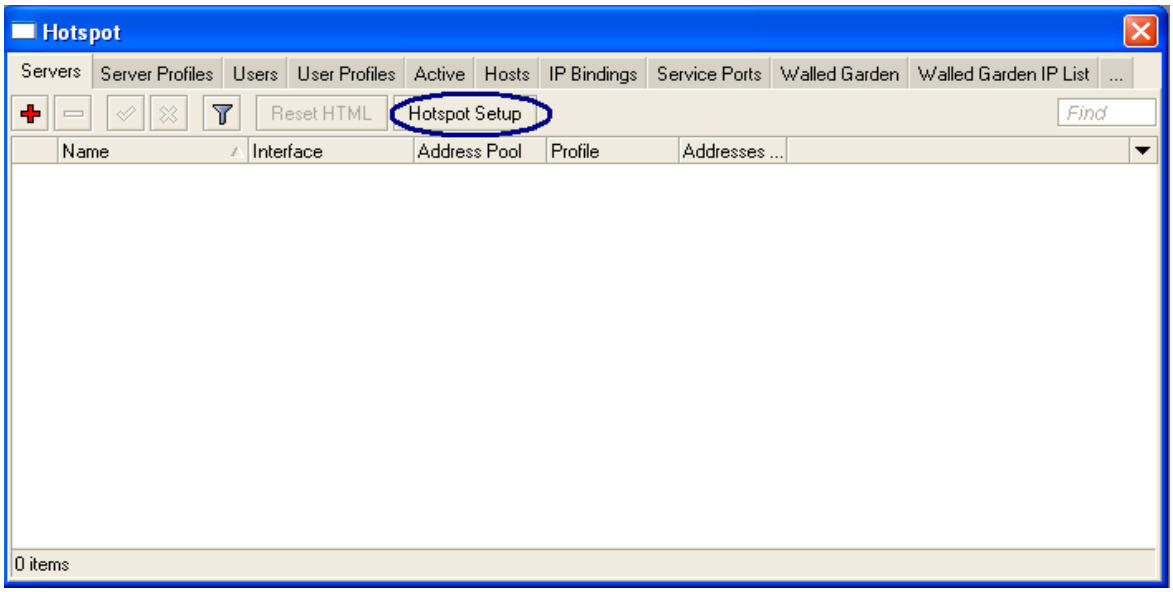
In the new window input:
/ip route add gateway=192.168.1.1 (see the bottom line), confirm with ENTER and close the window.


Terminal
MMM MMM KKK TTTTTTTTTTT KKK
MMMM MMMM KKK TTTTTTTTTTT KKK
MMM MMMM MMM III KKK KKK RRRRRR 000000 TTT III KKK KKK
MMM MM MMM III KKKKK RRR RRR 000 000 TTT III KKKKK
MMM MMM III KKK KKK RRRRRR 000 000 TTT III KKK KKK
MMM MMM III KKK KKK RRR RRR 000000 TTT III KKK KKK
MikroTik RouterOS 3.10 (c) 1999-2008 http://www.mikrotik.com/
[admin@MikroTik] > ip route add gateway=192.168.1.1

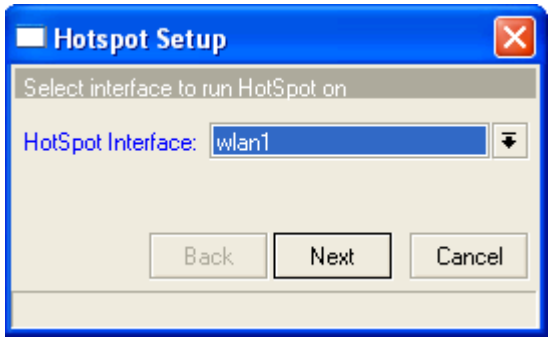
8. Configuring HotSpot - choose ***IP/Hotspot.***



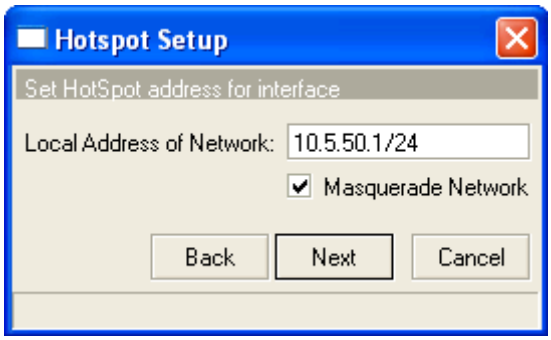
In the new window click on ***Hotspot Setup.***



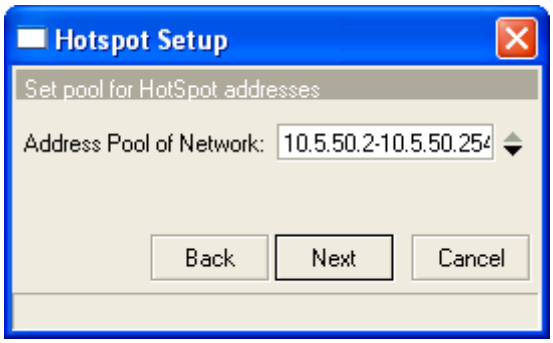
The wizard will help to configure the Hotspot. First, choose the HotSpot's interface. Select ***wlan1*** and click ***Next.***



9. Local address of the interface – no change is needed. Click ***Next.***

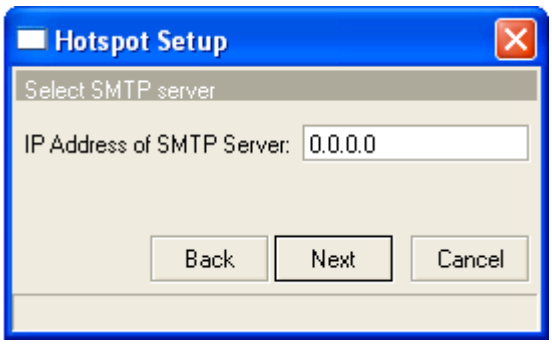


10. DHCP server pool - no change is needed. Click ***Next.***

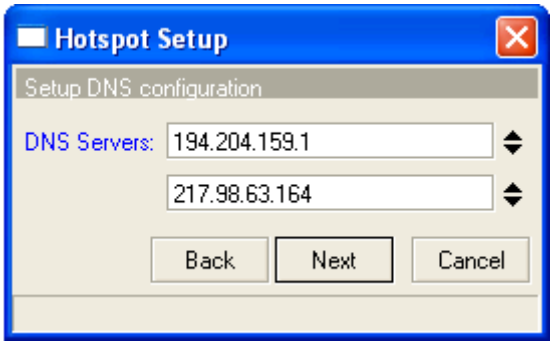


11. The next window allows to choose certificate (can be set **none**). Click ***Next.***

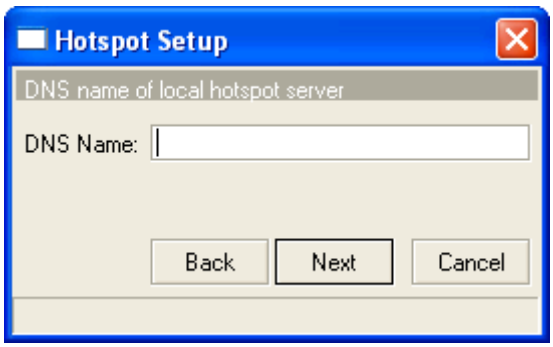
12. SMTP server address (can be set to 0.0.0.0). Click ***Next.***



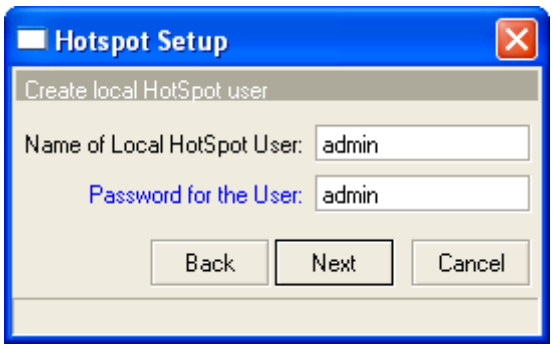
13. You'll see the previously entered DNS servers. Click ***Next.***



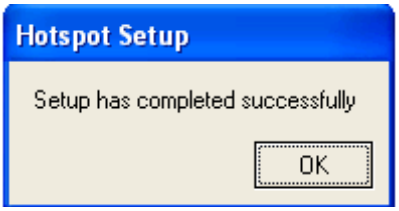
14. DNS server name (can be left blank). Click ***Next.***



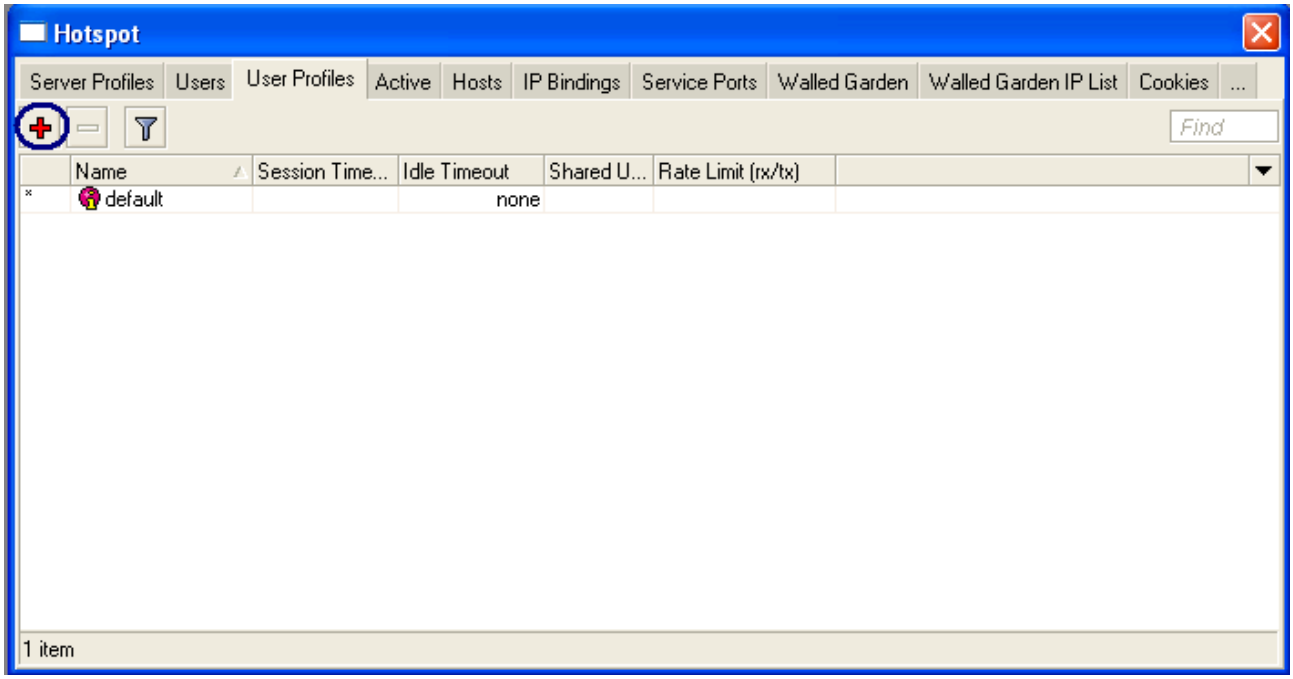
15. In the last window enter login and password, then click ***Next.***



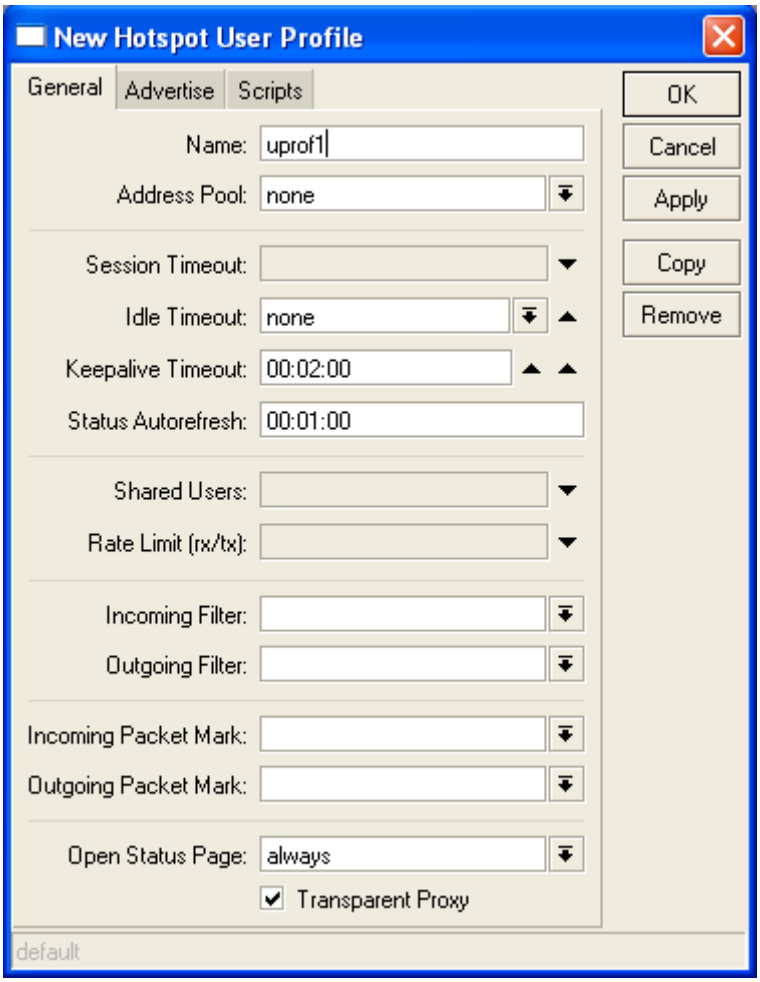
16. Successful setup is confirmed with this message:



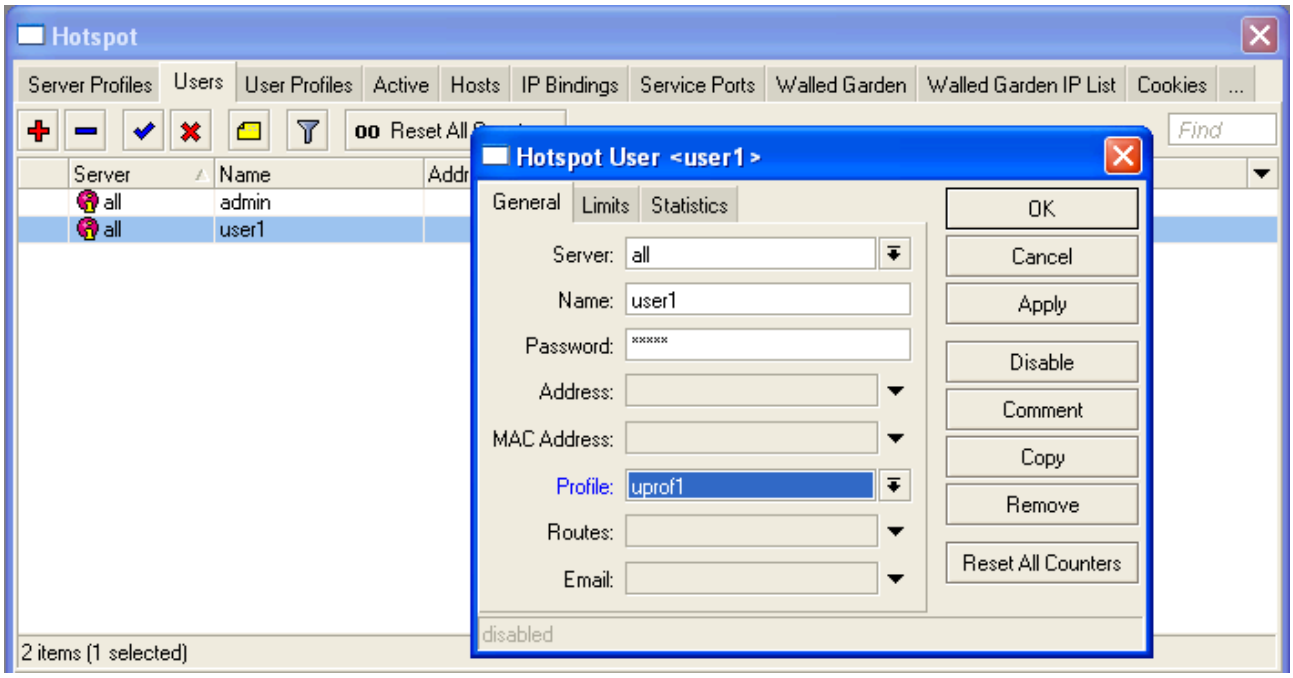
17. Creating user profiles – go to ***User Profiles*** tab and click **+**.



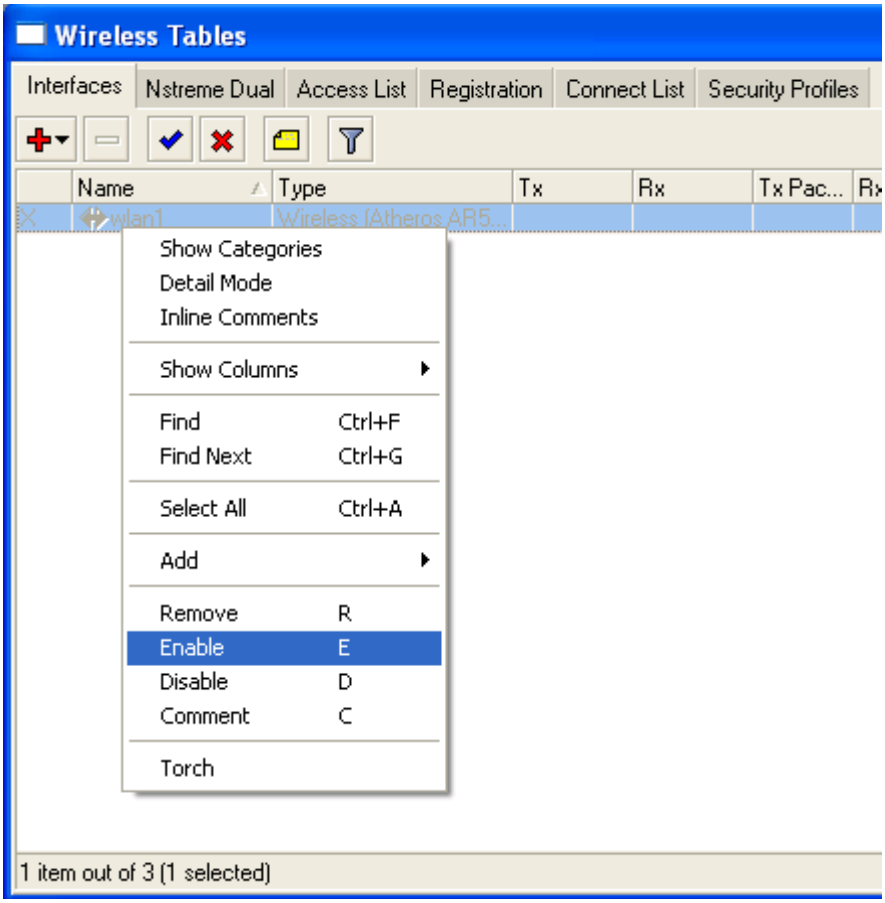
18. In **New Hotspot User Profile** configure the user profile, then click ***OK.***



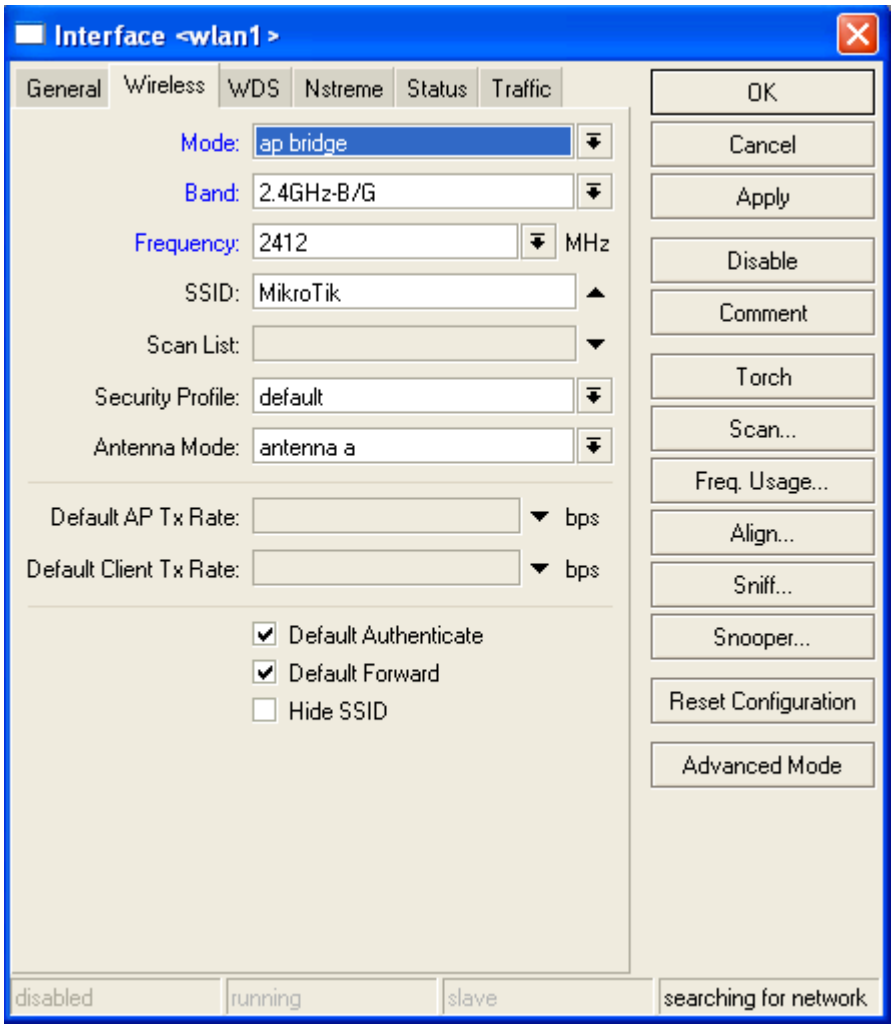
19. Go to ***Users*** tab to add next users. To add next user click **+** , enter the name, password, and the previously created profile.



20. After adding all users go to ***Wireless*** menu and configure wireless interface. Switch on wireless networks – right click on **wlan1** interface and then click ***Enable***.



21. Configuring wireless adapter (card) – double click on **wlan1** interface and go to ***Wireless*** tab.
Set ***ap bridge*** (Mode), ***MikroTik*** (SSID), ***2.4GHz-B/G*** (Band).



Copyright reserved:
DIPOL Szydlowski i
Wspolnicy Spolka Jawna
31-587 Krakow, ul. Cieplownicza 40
e-mail: dipol@dipol.com.pl
Internet: www.dipolnet.com
NIP: PL 678-01-01-049
REGON: 350509592
KRS: 0000094703